



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,347	01/23/2004	Yoshikazu Takahashi	32305-200192	4869
26694	7590	04/10/2007		
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER SOWARD, IDA M	
			ART UNIT	PAPER NUMBER
			2822	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/10/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

TH

Office Action Summary	Application No.	Applicant(s)	
	10/762,347	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Ida M. Soward	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 46-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 46-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Request for Continued Examination filed March 9, 2007.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **"the a plurality of electrodes arranged in a plurality of lines on the main surface of the semiconductor chip: a base resin film formed on the main surface of the semiconductor chip and having a plurality of electrode holes formed therein"** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

Art Unit: 2822

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 46-57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not understood which statement is correct "the conductive patterns extending near the through hole" or " the conductive patterns extending in the through holes" in lines 9-10 & 13, claim 46 and 8-9 & 12, claim 52.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 46-49 and 52-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Exposito (5,841,192).

In regard to claim 46, Exposito teaches a semiconductor device comprising: a semiconductor chip 3 having a main surface, a back surface and a plurality of side surfaces; a plurality of electrodes 5 arranged in a plurality of lines on the main surface of the semiconductor chip 3; a base resin film 1 formed on the main surface of the semiconductor chip 3 and having a plurality of electrode holes formed therein, the base resin film 1 having a first surface facing the main surface of the semiconductor chip 3, a second surface opposite to the first surface and a through hole provided thereof; a plurality of conductive patterns 7 formed on the first surface of the base resin film 1, the conductive patterns 7 extending near the through hole; and an insulating film 2 formed on the first surface of the base resin film 1 and the conductive patterns 7, wherein the conductive patterns 7 extending in the through hole are connected with the electrodes 5 and a plurality of electrode holes exposing a part of the conductive patterns 7 (Figure 1, columns 2-4, lines 48-67, 1-67 and 1-67, respectively).

In regard to claims 47 and 53, Exposito teaches the main surface and side surfaces of the semiconductor chip 3 are covered by molding resin 1 (Figure 1, column 2, lines 48-56).

In regard to claims 48 and 54, Exposito teaches a plurality of solder balls 5 formed on the electrode holes (Figure 1).

In regard to claims 49 and 55, Exposito teaches the base resin film 1 being formed on the main surface, back surface and side surfaces of the semiconductor chip 3 (Figure 1).

Art Unit: 2822

In regard to claim 52, Exposito teaches a semiconductor device comprising: a semiconductor chip 3 having a main surface, a back surface and a plurality of side surfaces; a plurality of electrodes 5 arranged in a plurality of lines on the main surface of the semiconductor chip 3; a base resin film 1 formed on the main surface of the semiconductor chip 3, the base resin film 1 having a first surface facing said semiconductor chip 3, a second surface opposite to the first surface, a through hole and a plurality of electrode holes provided thereof; a plurality of conductive patterns 7 formed on the second surface of the base resin film 1, the conductive patterns 7 extending near the through hole; an insulating film 2 formed on the second surface of the base resin film 1 and conductive patterns 7, wherein the conductive patterns 7 extending in the through hole are connected with the electrodes 5 and a plurality of electrode holes exposing a part of the conductive patterns 7 (Figure 1, columns 2-4, lines 48-67, 1-67 and 1-67, respectively).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 50-51 and 56-57 rejected under 35 U.S.C. 103(a) as being unpatentable over Exposito (5,841,192) as applied to claims 46-49 and 52-55 above, and further in view of Aoki et al. (5,672,912)

Art Unit: 2822

Exposito teaches all mentioned in the rejection above.

However, Exposito fails to teach the base resin film being covered by elastic resin and the elastic resin being polyimide.

Aoki et al. teach the base resin film 4 being covered by elastic resin and the elastic resin being polyimide (Figure 1, column 10, lines 40-45).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device structure as taught by Exposito with the semiconductor device having the base resin film being covered by elastic resin and the elastic resin being polyimide as taught by Aoki et al. to a high heat resistance film (column 6, lines 1-6).

Allowable Subject Matter

Claims 58-64 are allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to semiconductor device structures:

Amano (EP 540312 A1)

Finnila (5,426,072)

Kitano et al. (US 5,608,265)

Miles et al. (5,535,101).

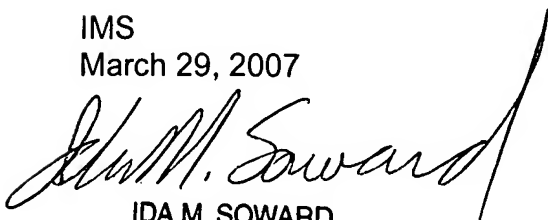
Art Unit: 2822

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M. Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IMS
March 29, 2007



IDA M. SOWARD
PRIMARY EXAMINER